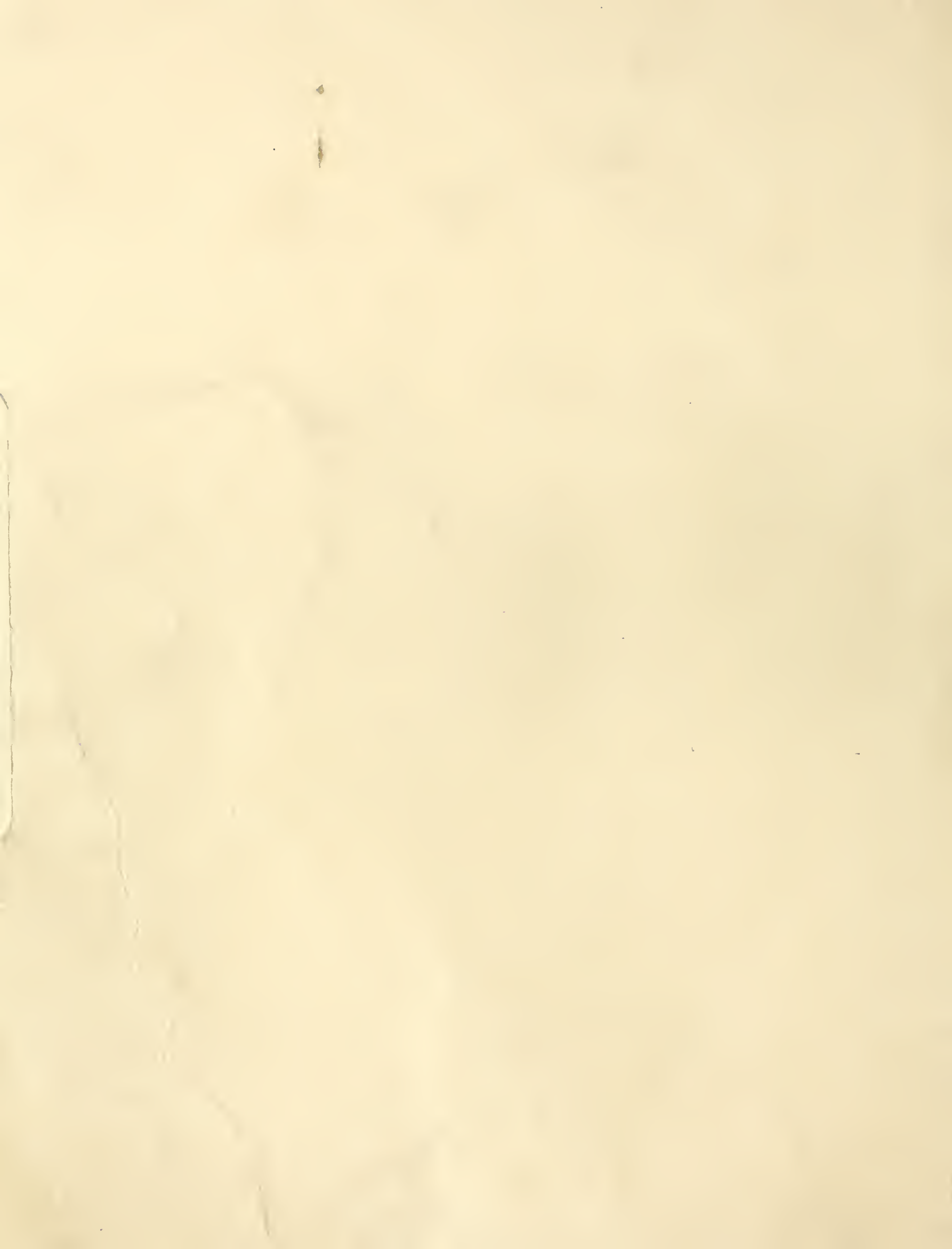


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Characteristics of Visitors Without Permits Compared to Those With Permits at the Desolation Wilderness, California

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Abstract—At the Desolation Wilderness a sample of visitors without the required use permit were asked to complete a short survey to allow them to be compared with visitors who had gotten permits. Previous research suggested that those without permits would be less experienced at the site, and be more likely to be anglers, on shorter visits, younger, in smaller groups, or with friends than visitors who had gotten permits. Some, but not all, of these earlier findings were true for the Desolation Wilderness. Additionally, visitors with permits were similar to those without permits for some important characteristics, including level of support for limiting day use, suggested party size limits, the proportion belonging to conservation groups, and the number of years since they first visited the Desolation Wilderness.

Keywords: recreation, use restrictions, visitor management, use measurement, visitor characteristics

This study compares the characteristics of Desolation Wilderness visitors who did not have the required use permit to those who did. Previous research on noncompliant visitors is limited. Research in the early 1970's at the Boundary Waters Canoe Area Wilderness found that those on short visits, staying in resorts or campgrounds, or using motor boats were less likely to comply with the permit requirement there (Lime and Lorence 1974). At North Cascades National Park in the early 1970's, compliance was low for young adults, groups with only one or two members, individuals from rural areas and small towns, groups of friends, and anglers (Hendee and others 1990).

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Hendee and others (1990) concluded that mandatory visitor permit systems probably provide the most accurate wilderness-use data. Most wilderness permit systems require visitors to obtain permits before entering an area. If they do not, they are violating regulations. Permits are usually issued by agency offices through the mail, over the phone, or in person. Another option, however, is the self-issued permit. In this case, visitors fill out permits at the trailhead or immediately outside agency offices. They leave a copy at the station, taking the original with them on their wilderness visit. This option allows visitors to avoid traveling to an agency office before their visit or may allow them to get a permit outside the office after working hours. This option can be used only where an unlimited number of permits can be issued. In many cases, the number of permits is limited to control the amount of use.

A mandatory permit system may have other significant benefits (Hendee and Lucas 1973; van Wagendonk and Coho 1986). The most common advantage mentioned by advocates of permit systems is communication between managers and visitors. Visitors may learn where, how, or when to travel in the wilderness to reduce conflict, crowding, or resource impacts.

Where the permit requirement is well enforced, compliance is usually relatively high. DeGraff (1983) reported 95 percent compliance on the Inyo National Forest after about 8 years of active enforcement. Self-issue permit compliance can vary substantially. Highs of 90 to 95 percent compliance have been reported (Hendee and others 1990), although significantly lower compliance has been found at some places (Lucas and Kovalicky 1981). Permit compliance is believed to increase with increased enforcement, increased publicity about permit requirements, and the passage of time as visitors become more aware of the requirements (Lime and Lorence 1974).

In 1980, 69 wildernesses had permit systems. Only 17 wildernesses limited use (Washburne and Cole 1983). Now only about 50 wildernesses issue permits, although some managers in Oregon have recently reestablished permit systems that had been in place before 1982. The number of wildernesses limiting use has increased to about 25. Most of the new areas limiting use are managed by the Forest Service. The number of wildernesses requiring permits could easily increase, given managers' concerns about use levels and resource impacts.

METHODS

During 1990, a study was conducted at the Desolation Wilderness in California to determine trends in visitors' characteristics and preferences. The study was designed to replicate research methods used in two earlier studies. Those studies, however, included only visitors who obtained permits. My interest was not only in trends in permit holders, but also in determining how representative permit holders were of the entire visitor population. Therefore, a sample of visitors without permits was obtained.

The Desolation Wilderness is administered by the Lake Tahoe Basin Management Unit and the Eldorado National Forest. They helped obtain a convenience sample of visitors without permits. Wilderness rangers are instructed to contact all visitors they encounter while performing their duties within the Desolation Wilderness. During this contact, the rangers check to see if the visitor obtained a permit before entering the area (fig. 1). Both day users and overnight campers must have a permit. The number of day-use permits is unlimited; however, the number of overnight permits for each entry point is limited during the summer season. Day-use permits are available from Forest



Figure 1—Desolation Wilderness rangers are instructed to check all visitors for the required permit.



Figure 2—Day-use permits can be obtained at Desolation Wilderness trailheads.

Service offices. Self-issued permits for day use are available at most entry points (fig. 2). During the summer, when overnight permits are restricted, they are available only from Forest Service offices. They may be obtained in advance.

Wilderness rangers administered a short questionnaire to 123 visitors without permits whom they encountered in the Desolation Wilderness. Sampling occurred during both the summer and fall. The questionnaire, which was completed by up to two visitors per group, was relatively short (about 40 items). Most items could be answered with a checkmark in the appropriate space. Five of 123 questionnaires were not usable, yielding 118 usable surveys. This sample included 79 day users and 39 overnight campers. These data were compared to those from 253 day users and 188 campers who had permits and were included in the larger visitor trend study. *T*-tests were used to compare means, distributions were examined, and data were transformed when necessary to adjust for nonnormality.

RESULTS

Tables 1 to 4 present the comparisons between visitors who obtained permits and those who did not.

Activity Participation

Differences in the level of participation by visitors with permits and those without permits were found for some activities, but not for fishing—a difference that had been found in one previous study of permit noncompliance (table 1). Day users without permits participated less than day users with permits in nature study, photography, and viewing scenery. Day users without permits were more likely to participate in swimming and nude sunbathing. Campers without permits differed from campers with permits in

Table 1—Participation in selected activities by visitors to the Desolation Wilderness, the number of years since visitors made their first trip, and the number of past visits. Values for day users with permits and day users without permits were tested to see if they were significantly different, as were values for campers with permits and campers without permits

Activity	Day users		Campers	
	With permits	Without permits	With permits	Without permits
----- Percent -----				
Fishing	15	14	41	36
Hunting	3	3	5	13
Hiking off trail	32	34	55	49
Nature study	51	34	43	33
Viewing scenery	91	76	91	79
Photography	52	38	60	41
Swimming	18	32	46	59
Nude sunbathing	4	10	20	23
----- Years -----				
Years since first visit ²				
Average	13	11	11	11
Median	10	9	9	8
75-percent level	20	17	18	20
----- Number of visits -----				
Past visits ²				
Average	12	36	13	6
Median	2	2	5	2
75-percent level	10	9	10	9

¹Observed frequencies are significantly different than expected, based on chi-square analysis, $p < 0.05$.

²Data transformed for t -test comparison to adjust for nonnormality.

³Average number of past visits is significantly greater for day users with permits than for those without permits (two-sample t -test, $p < 0.05$).

two ways: those without permits were more likely to be hunting (although participation was low for this activity), and they were less likely to take photographs.

Party Composition

Party sizes were similar for all visitors, with an average size of just over three, and a median of two to three (table 2). The most common party size was two. Day users without permits were more likely to be visiting with groups of friends and less likely to be alone (fig. 3) than day users with permits (table 3). The composition of parties of campers without permits did not differ significantly from parties of campers with permits, although those without permits were more likely to be in groups of friends and less likely to be alone. This finding was consistent with that of day users without permits.

Support for Restrictions on Use

Only about one-fifth of the day-users said they saw too many other people during their visit (table 4). More than one-third to nearly one-half

of the campers said they saw too many other people. No significant differences existed between visitors without permits and those with permits. Although just a minority reported seeing too many people, the majority supported use restrictions if an area is being used beyond capacity (table 4). This suggests many visitors do not feel capacity has been exceeded at the Desolation Wilderness. Day users with permits find use restrictions much more desirable (93 percent support them) than day users without permits (just 67 percent support them). A majority of all user groups support limiting party size (table 4). Those who support party size limits suggested a limit of 10 people per party (table 2).

The majority of both day-use groups find it undesirable to limit the number of day hikers in the Desolation Wilderness (table 4), although a substantial percentage of both groups is unsure or neutral on this issue. Campers are more likely to support limiting day use. Visitors with permits are significantly more likely to support substantial penalties for entering the Desolation Wilderness without a permit than are those without permits (table 4). A large percentage of all user groups are neutral on this issue.

Table 2—Comparisons of visitors with permits to those without permits, based on party size, suggested party size limits, education, age, and length of stay in the wilderness. Values for day users with permits and day users without permits were tested to see if they were significantly different, as were values for campers with permits and campers without permits

	Day users		Campers	
	With permits	Without permits	With permits	Without permits
----- <i>Number</i> -----				
Party size ¹				
Average	3.1	3.1	3.4	3.1
Median	2	2	2	3
75-percent level	4	4	4	4
2-person group (percent)	40	48	40	40
Suggested party size limits ¹				
Average	10	10	10	8
Median	10	8	8	6
----- <i>Percent</i> -----				
Education				
Less than high school	2	² 9	3	² 5
High school graduate	8	² 8	6	² 3
Some college	24	² 25	19	² 36
College graduate (BS/BA)	18	² 20	21	² 23
Graduate study	48	² 38	51	² 33
----- <i>Years</i> -----				
Age				
Average	40	³ 34	36	³ 32
Median	39	34	35	30
75-percent level	46	41	41	38
----- <i>Number of nights</i> -----				
Length of stay in the wilderness				
Average			2.3	⁴ 1.7
Median			2	1

¹Data transformed for *t*-test comparison to adjust for nonnormality.

²Observed frequencies are significantly different than expected, based on chi-square analysis, $p < 0.05$.

³Average age is significantly younger for day users and campers without permits than for those with permits (two-sample *t*-test, $p < 0.05$).

⁴Average length of stay is significantly shorter for campers without permits than for campers with permits (two-sample *t*-test, $p < 0.05$).

Personal Characteristics

Day users with permits averaged more past trips to the Desolation Wilderness than day users without permits (table 1). Both groups of day users had a median of two previous trips. Campers with permits had a relatively high median of five previous trips, although the means did not differ significantly from campers without permits. All user groups had been visiting the Desolation Wilderness over the last 11 to 13 years on average (table 1). Campers without permits were more likely to be on their first visit to the Desolation Wilderness than campers with permits (table 3). Campers were equally likely to belong to conservation or outdoor recreation groups whether the campers had permits or not (table 3).

Education levels, however, were slightly, though significantly, higher for visitors who obtained permits (table 2). Around 20 to 25 percent of all visitors indicated they were students. As in the North Cascades study in the early 1970's, visitors without permits tended to be younger (table 2). Campers with permits tended to camp slightly longer (an average of 2.3 nights) than those without permits (1.7 nights, table 2). The median follows this trend as well; the median stay for campers with permits was 2 nights compared to 1 night for campers without permits. About 80 percent of all visitors live more than 50 miles from the Desolation Wilderness, and 10 percent live within 20 miles. Local residents were no more or less likely to have permits than visitors from farther away.

Table 3—Comparisons of visitors with permits to those without permits, based on membership in conservation or outdoor recreation organizations, whether they were on their first visit to the Desolation Wilderness, and whether they were traveling alone or with family and friends. Values for day users with permits and those without permits were tested to see if they were significantly different, as were values for campers with permits and campers without permits

	Day users		Campers	
	With permits	Without permits	With permits	Without permits
----- Percent -----				
Organization member				
Yes	34	28	41	31
First visit				
Yes	35	29	14	128
Party composition				
Friends	24	² 43	37	54
Family	47	² 39	36	30
Friends and family	15	² 12	14	11
Alone	14	² 6	13	5

¹Observed frequencies are significantly different than expected, based on chi-square analysis, $p < 0.05$.

²Observed frequencies are significantly different than expected, based on chi-square analysis, $p = 0.008$.

Table 4—How visitors feel about the number of other people they saw in the Desolation Wilderness during their visit, how they feel about potential restrictions, and how they feel about substantial penalties. Values for day users with permits and day users without permits were tested to see if they were significantly different, as were values for campers with permits and campers without permits

Response	Day users		Campers	
	With permits	Without permits	With permits	Without permits
----- Percent -----				
Number of people seen				
About right or too few	66	68	58	51
Too many	19	23	37	46
Did not matter	16	8	4	3
Restricting the numbers of visitors if an area is used beyond capacity				
Undesirable	3	¹ 13	2	8
Neutral	4	¹ 20	3	3
Desirable	93	¹ 67	95	89
Limiting party size				
Undesirable	11	21	10	14
Neutral	21	23	14	11
Desirable	68	56	76	76
Limiting day users				
Undesirable	65	53	37	43
Neutral	19	31	25	32
Desirable	16	17	39	24
Substantial penalties for entering the Desolation Wilderness without a permit				
Undesirable	24	¹ 40	21	¹ 41
Neutral	34	¹ 42	23	¹ 27
Desirable	43	¹ 18	56	¹ 32

¹Observed frequencies are significantly different than expected, based on chi-square analysis, $p < 0.05$.



Figure 3—Lone day hikers were more likely to have permits than day hikers traveling in groups in the Desolation Wilderness.

CONCLUSIONS

Previous research suggested that those without permits would have made fewer visits to the wilderness, would have been on shorter visits, would have been younger, would have been more likely to be in one- or two-person groups, would have been with friends, and would have been more likely to be anglers. Some of these characterizations were true for visitors to the Desolation Wilderness; others were not.

For instance, day users without permits had made fewer previous trips to the Desolation Wilderness than day users with permits, and a greater percentage of campers without permits were on their first visit to the Desolation Wilderness. These findings are consistent with previous research. On the other hand, visitors were equally likely to have made their first visit to the wilderness about 11 to 13 years ago, whether they had a permit or not. This suggests that the important measure of experience at the site is the number of previous visits. If the number of first-time visitors increases in the future, the number of visitors without permits would likely increase also.

Consistent with past findings, campers without permits tended to be on shorter trips than those with permits, and they tended to be younger. All visitors were more likely to be hiking with friends or in parties of two or more if they had not gotten permits. Visitors who hike or camp alone appear to be more likely to get a permit.

Past research indicated anglers would be less likely to have a permit; that was not true in the Desolation Wilderness. Day users without permits were more likely to participate in other water-associated activities, such as swimming and nude

sunbathing, than day users with permits. Day users without permits also were less likely to participate in nature study, viewing scenery, and taking photographs.

Day users without permits were not as likely to support use restrictions as much as day users with permits. Campers strongly supported use restrictions, whether they had permits or not. The strength of this support may seem inconsistent for visitors who didn't get permits. All visitors indicated relatively strong support for limits on party size, whether they had permits or not. Visitors who did not have permits were much more likely to oppose substantial penalties for entering the Desolation Wilderness without a permit.

Visitors without permits had important characteristics in common with those who had permits. The same proportion thought too many other people were in the wilderness and supported limiting party size. For those supporting party size limits, the suggested limits were not different. Nor did they differ significantly in their support for limiting the number of day users. About one-third or more of all visitors belong to conservation groups and from one-fifth to one-fourth are still students. The majority of visitors to the Desolation Wilderness live more than 50 miles away. This was true whether visitors had permits or not.

Although these results apply specifically to Desolation Wilderness visitors, they help us understand the ways in which permit holders may or may not be representative of the general population of visitors. This information may help evaluate efforts to increase compliance by indicating which types of visitors are least likely to get permits.

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